

## Claims

1. A digital signal processing method for converting a digital signal, comprising:

a step of cutting parts out of the digital signal by plural windows having different sizes and calculating their respective self correlation coefficients;

a step of classifying the parts into a class based on the calculation results of the self correlation coefficients; and

a step of generating a new digital signal which is obtained by the digital signal, by prediction-operating the digital signal by a prediction method corresponding to the obtained class.

2. The digital signal processing method as defined in Claim 1, wherein

in said step of calculating self correlation coefficients, at least a general searching range and a local searching range are provided as targets for calculating the self correlation coefficients with respect to the digital signal, and the self correlation coefficients are calculated based on the searching ranges.

3. The digital signal processing method as defined in Claim 1, wherein:

in said step of calculating self correlation coefficients,

the self correlation coefficients are calculated after eliminating the amplitude element of the digital signal.

4. A digital signal processing device for converting a digital signal, comprising:

self correlation coefficient calculation means for cutting parts out of the digital signal by plural windows having different sizes and calculating their respective self correlation coefficients;

class-classification means for classifying the parts into a class based on the calculation results of the self correlation coefficients; and

prediction calculation means for generating a new digital signal which is obtained by converting the digital signal, by prediction-operating the digital signal by a prediction method corresponding to the obtained class.

5. The digital signal processing device as defined in Claim 4, wherein

said self correlation coefficient calculation means is provided with at least a general searching range and a local searching range as targets for calculating the self correlation coefficients with respect to the digital signal, and calculates the self correlation coefficients based on the searching ranges.

6. The digital signal processing device as defined in Claim 4, wherein:

said self correlation coefficient calculation means calculates the self correlation coefficients after eliminating the amplitude element of the digital signal.

7. A program storage medium for making a digital signal processing device execute a program including:

a step of cutting parts out of the digital signal by plural windows having different sizes and calculating their respective self correlation coefficients;

a step of classifying the parts into a class based on the calculation results of the self correlation coefficients; and

a step of generating a new digital signal that is obtained by converting the digital signal, by prediction-operating the digital signal by a prediction method corresponding to the obtained class.

8. The program storage medium as defined in Claim 7, wherein in said step of calculating self correlation coefficients, at least a general searching range and a local searching range are provided as targets for calculating the self correlation coefficients with respect to the digital signal and the self correlation coefficients are calculated based on the searching

ranges.

9. The program storage medium as defined in Claim 7, wherein in said step of calculating self correlation coefficients, the self correlation coefficient are calculated after the amplitude element of the digital signal is eliminated.

10. A learning method for generating prediction coefficients which are used for prediction calculation of conversion processing by a digital signal processing device for converting a digital signal, said learning method comprising:

a step of generating, from a desired digital signal, a student digital signal in which the digital signal is degraded;

a step of cutting parts out of the student digital signal by plural windows having different sizes and calculating their respective self correlation coefficients;

a step of classifying the parts into a class based on the calculation results of the self correlation coefficients; and

a step of calculating prediction coefficients corresponding to the class based on the digital signal and the student digital signal.

11. The learning method as defined in Claim 10, wherein in said step of calculating self correlation coefficients, at least a general search range and a local search range are

provided as targets for calculating targets of the self correlation coefficients, and the self correlation coefficients are calculated based on the searching ranges.

12. The learning method as defined in Claim 10, wherein in said step of calculating self correlation coefficients, the self correlation coefficients are calculated after the amplitude element of the digital signal is eliminated.

13. A learning device for generating prediction coefficients which are used for prediction calculation of conversion processing by a digital signal processing device for converting a digital signal, said learning device comprising:

student digital signal processing means for generating, from a desired digital signal, a student digital signal in which the digital signal is degraded;

self correlation coefficient calculation means for cutting parts out from the student digital signal by multiple windows having different sizes and calculating their respective self correlation coefficients;

class-classification means for classifying the parts into a class based on the calculation results of the self correlation coefficients; and

prediction coefficient calculation means for calculating prediction coefficients corresponding to the class based on the

digital signal and the student digital signal.

14. The learning device as defined in Claim 13, wherein said self correlation coefficient calculation means is provided with at least a general searching range and a local searching range with respect to the digital signal as targets for calculating the self correlation coefficients and calculates the self correlation coefficients based on the searching ranges.
15. The learning device as defined in Claim 13, wherein said self correlation coefficient calculation means calculates the self correlation coefficients after eliminating the amplitude element of the digital signal.
16. A program storage medium to make a learning device execute a program including:
  - a step of generating, from a desired digital signal, a student digital signal in which the digital signal is degraded;
  - a step of cutting parts out of the student digital signal by plural windows having different sizes and calculating their respective correlation coefficients;
  - a step of classifying the parts into a class based on the calculation results of the self correlation coefficients; and
  - a step of calculating the prediction coefficients

corresponding to the class based on the digital signal and the student digital signal.

17. The program storage medium as defined in Claim 16, wherein in said step of calculating self correlation coefficients, at least a general searching range and local searching range are provided with respect to the digital signal as calculation targets of the self correlation coefficients and the self correlation coefficients are calculated based on the searching ranges.

18. The program storage medium as defined in Claim 16, wherein in said step of calculating self correlation coefficients, the self correlation coefficients are calculated after the amplitude element of the digital signal is eliminated.